



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/573,903

03/29/2006

Jean-Pierre Tranier

Serie 6311

2096

40582

7590

01/12/2009

AIR LIQUIDE

Intellectual Property

2700 POST OAK BOULEVARD, SUITE 1800

HOUSTON, TX 77056

EXAMINER

DOERRLER, WILLIAM CHARLES

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

01/12/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/573,903	<b>Applicant(s)</b> TRANIER, JEAN-PIERRE	
	<b>Examiner</b> William C. Doerrler	<b>Art Unit</b> 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

The drawings were received on 11-12-2008. These drawings are acceptable.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13-18,23,25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rottmann (5,749,246) in view of either Sibley et al (5,486,052) or Eklund (3,542,443).

Rottmann discloses applicant's basic inventive concept, a multiple column air separation system that expands a nitrogen stream using a turbine (see column 2 lines 27-42), substantially as claimed with the exception of specifying that lubricant free rolling bearings are used. Sibley et al (see the paragraph beginning on line 3 of column 10) and Eklund (see line 19 of column 2 or line 8 of column 1) each show this feature to be old in the rotary device operating at cryogenic temperature art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the

Art Unit: 3744

teaching of either Sibley et al or Eklund to modify the air separation system with a turbine having bearings to expand a product stream of Rottmann by using lubrication free bearings to eliminate maintenance requirements and eliminate the possibility of lubricant leaking into the treated fluid stream. In regard to the height of the installation above the floor, the height of the turbine installation is seen as a matter of obvious design choice for an ordinary practitioner in the art, depending on the available space and surrounding equipment. Rottmann shows expander 25 that expands a fluid stream entering separator 7

Claims 19-22,24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rottmann in view of Eklund or Sibley et al as applied to claims 13-18,23,25 and 26 above, and further in view of Nenov (5,924,307).

Rottmann, as modified, discloses applicant's basic inventive concept, an air separation system with a turbine to expand a nitrogen stream using lubrication free rolling bearings, substantially as claimed, with the exception of using a booster or a generator as a brake for the turbine. Nenov shows these features to be old in the air separation art with centrifugal booster compressor 350 and generator 370 being powered by turbine 313 which expands a system fluid. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Nenov to modify the air separation system with a turbine to expand a fluid stream of Rottman by using a braking booster or braking compressor to recover energy derived from controlling the speed of the compressor to improve the efficiency of the system. In regard to claims 20,21 and 24, Sibley et al and Eklund show the use of unlubricated rolling bearings to be known in

Art Unit: 3744

the art. This teaching is seen to apply to any rotating shaft, as the forces will be similar. In regard to claim 22, Rottmann shows magnetic bearings to be old in the spinning shaft art in line 31 of column 2.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

Eklund and Sibley et al both show rotary devices operated at cryogenic temperatures with rolling bearings.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Naumovitz et al show a cryogenic separation system with a braking generator. Jen, Finger et al, Zerkowitz, McClure and both Bosen patents show bearing systems for cryogenic turbines.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3744

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

William C Doerrler  
Primary Examiner  
Art Unit 3744

WCD

/William C Doerrler/  
Primary Examiner, Art Unit 3744